fixtures, the fundamental principles of jig and fixture design will be briefly outlined. Whenever a jig is made for a component part of a machine, it is almost always required that a corresponding jig be made up for the place on the machine, or other part, where the first-mentioned detail is to be attached. It is, of course, absolutely necessary that these two jigs be perfectly alike as to the location of guides and gage points. In order to have the holes and guides in the two jigs in alignment, it is advisable, and almost always cheaper and quicker, to transfer the holes or the gage points from the first jig made to the other. In many instances, it is possible to use the same jig for both parts. Cases where the one or the other of these principles is applicable will be shown in the following chapters in the detailed descriptions of drill and boring jigs.

There are some cases where it is not advisable to make two jigs, one for each of the two parts which are to fit together. It may be impossible to properly locate the jig on one of the parts to be drilled, or, if the jig were made, it may be so complicated that it would not be economical. Under such conditions the component part itself may be used as a jig, and the respective holes in this part used as guides for the tools when machining the machine details into which it fits. Guide bushings for the drills and boring bars may then be placed in the holes in the component part itself. In many cases, drilling and boring operations are also done, to great advantage, by using the brackets and bearings already assembled and fastened to the machine body as guides.

One of the most important questions to be decided before making a jig is the amount of money which can be expended on a special tool for the operation required. In many cases, it is possible to get a highly efficient tool by making it more complicated and more expensive, whereas a less efficient tool may be produced at very small expense. To decide which of these two types of jigs and fixtures should be designed in each individual case depends entirely upon the circumstances. There should be a careful comparison of the present cost of carrying out a certain operation, the expected cost of carrying out the same operation